

Abstract ID : 638

Title : Diving costs and prey availability of Weddell seals: comparisons of three-dimensional dive paths and image data between two breeding colonies.

Category : Behavior

Student : Not Applicable

Preferred Format : Oral Presentation

Abstract : Multi-data sampling on free-ranging animals appears as a valuable tool to investigate foraging effort in relation to environmental features. In order to compare diving costs and prey availability of Weddell seals (*Leptonychotes weddellii*) between two breeding sites, we deployed simultaneously three types of data loggers on five free-ranging individuals. Field experiments were conducted between November-December 2000 at two sites (siteI and II) in McMurdo Sound, Antarctica. Depth gauges measurements indicated that siteI seals, following immersion, had to follow the island slope to reach deep waters, while siteII seals could dive from ice holes opening directly over deep waters. The three-dimensional dive paths of seals were reconstructed using 3MPDT loggers (depth, swim speed, three-dimensional geomagnetism) and D2GT loggers (depth, two-dimensional gravitational acceleration). Prey index along dive paths was estimated using DSL loggers (digital still camera). Each dive was subdivided into a descent, an ascent, and a bottom phase using depth data.

This study has quantified some of the cost and benefits associated with various three-dimensional dive paths available to free-ranging Weddell seals while they forage beneath the fast ice in Antarctica. Seals descended and ascended using straight paths. Bottom phase had a significant higher prey index than traveling (= descent + ascent) phase. The three-dimensional diving behavior of siteI seals was limited by bathymetry, and the ratio of bottom phase (= (bottom duration) / (dive duration + post-surface duration)) was significantly shorter than siteII. However, prey index at siteI was significantly higher than siteII. Our data suggests that there is a trade-off between diving costs and prey availability.